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EFFECT OF WATER DEFICIT STRESS ON FREE AMINO ACID CONTENT OF *ABELMOSCHUS ESCULENTUS* (L.) MOENCH

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ABSTRACT

Abelmoschus esculentus (L.) Moench. was subjected to water deficit stress. Water content of soil was measured. Water status in plant tissue was measured in the fifth leaf in terms relative water contents (RWC). Amino acid contents of the fifth leaf were analyzed. Amino acids were separated by two-dimensional paper chromatography and their quantitative estimation was done by spectrophotometer. It was found that water contents of soil and that of the fifth leaf decreased but the free amino acid contents increased in response to water stress.

Keywords: Free amino acids, Paper chromatography, Relative water contents, Water stress.

INTRODUCTION

Among the various environmental stress conditions, water deficit stress is perhaps the most significant. According to an estimate (Street and Opik, 1984), the global losses in potential yield caused by water deficit stress exceed losses from all other causes combined.

Drought, a synonym of water deficit stress, is not unfamiliar in India. A sizeable part of our agricultural land is rain-fed. Rainfall has been erratic and every year farmers have to suffer losses in productivity up to some extent due to drought. Mountains also experience scarcity of water. Even after a good rainfall, most of the water moves away from the mountains as surface runoff and the plants face drought conditions. Therefore, it is relevant to evaluate the responses of crop plants to water stress in hilly areas.

For the present study, a common vegetable okra, *Abelmoschus esculentus* (L.) Moench cv. Parbhani Kranti was selected with the objective (i) to determine the soil moisture and RWC of leaf samples under water stress condition, and (ii) to analyze the leaf samples for biochemical alterations with reference to free amino acids due to water deficit stress.

MATERIALS AND METHODS

Fire-clay pots of size 12"×10" were selected for the experiment. The potting mixture consists of garden soil with farm yard manure in 1:1 ratio. Seeds of okra cv.

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